REMARKS/ARGUMENTS

The claims are 1, 5, 7-11 and 14-16. Claim 1 has been amended to incorporate the subject matter of claims 3, 4 and 6. Accordingly, claims 3, 4 and 6 have been canceled. Reconsideration is expressly requested.

Applicants wish to thank the Examiner for the courtesy of a telephone interview on or about October 1, 2007, the substance of which is set forth herein. In the Office Action, the Oath/Declaration was objected to as not acknowledging the filing of any foreign application. At the interview, it was pointed out that the Declaration filed clearly acknowledges German Application No. 102 60 761.3 filed December 23, 2002, and the Examiner confirmed that the Declaration did acknowledge the foreign filing and that the statement to the contrary in the Office Action was in error.

Claims 1, 3-6 and 14-16 were rejected under 35 U.S.C. 103(a)

as being unpatentable over *Miller et al U.S. Patent No. 5,380,276* in view of *Simán U.S. Patent No. 5,968,009*. Claims 1, 3, 6-8, 11 and 14-15 were rejected under 35 U.S.C. 103(a) as being unpatentable over *Currier et al U.S. Patent Application Publication No. 2004/0015138* in view of *Simán*. Claims 9-10 were rejected under 35 U.S.C. 103(a) as being unpatentable over *Miller et al* or *Currier et al* in view of *Simán*.

Essentially the Examiner's position was that each of *Miller et al* and *Currier et al* discloses the catheter recited in the claims, except for the quotient of the cross-sectional area of the first catheter lumen F1 and the cross-sectional area of the further catheter lumen F2 being greater than the square of the quotients of the width of the first D1 and the width of the further catheter lumen D2 (in other words, F1/F2 is greater than $(D1/D2)^2$) which was said to be taught by *Simán*.

This rejection is respectfully traversed.

As set forth in claim 1 as amended, Applicants' invention provides a catheter having a catheter body with an interior forming a first (guide wire) lumen and a further lumen divided off from the first lumen by a partition disposed in the interior, which provides a small outside diameter together with a low flow resistance in the catheter lumen.

By means of the arrangement set forth in claim 1 as amended, the cross-sectional area of the catheter tube is used in an optimal manner so that the larger catheter lumen, in any case, has such a cross-sectional area that its flow-resistance lies within limits that permit problem-free pressure measurement with a low response delay, even with extremely small outside diameters.

Despite the essentially eccentric placement of the further catheter lumen, the catheter demonstrates sufficient thickness as to allow handling of the catheter in the usual manner. Surprisingly, despite the cross-sectional area of the first catheter lumen, which deviates from the circular shape, it is

excellently suited for accommodating the guide wire, and the catheter can be pushed into a blood vessel over the guide wire without problem until it has reached its final position. The subsequent "drawing" of the guide wire also proceeds without problem, and in particular, no jamming or wedging of the guide wire in the first catheter lumen occurs, and the first catheter lumen is subsequently used, for example, to measure blood pressure or to supply liquid substances in accordance with its intended purpose.

None of the cited references discloses or suggests the catheter having the structure set forth in claim 1 as amended or even is concerned with providing a catheter which provides a small outside diameter together with a low flow resistance in a catheter lumen.

According to *Miller et al*, the cross-sectional areas of both lumens of the catheter are approximately equal. See e.g. column 8, lines 1-2 and the last two lines of the Abstract of *Miller et al*. Therefore, it is respectfully submitted that not only does

Miller et al fail to render obvious any aspects of implementing catheters with lumens of significantly unequal lumen cross sections, *Miller et al* teaches away from Applicants' catheter as recited in claim 1 as amended. In other words, *Miller et al* fails to disclose or suggest, or even provide any hint with regard to finding proper dimensions of catheter lumens with unequal cross-sectional areas, as *Miller et al* teaches to create the cross-sectional areas of both lumens of the catheter equal.

Currier et al teaches a multiple lumen catheter having a soft tip in which the lumen with the larger cross-sectional area is round and at the concave side of the wall separating the lumens from each other. See FIG. 7 of *Currier et al*. In other words, *Currier et al* teaches the opposite of Applicants' claim 1 as amended according to which the lumen with the smaller cross-sectional area is round and at the concave side of the wall separating the lumens from each other.

The defects and deficiencies of the primary references to *Miller et al* and *Currier et al* are nowhere remedied by the

secondary reference to *Simán*. Like *Miller et al*, *Simán* focuses on catheters with about equally-sized lumens. See column 2, line 5 of *Simán*: "cross-sectional areas of the two lumens are substantially equal." Further, according to *Simán*, the primary guide wire portion is situated in the lumen bordered by the concave arcuate portion of the lumen wall (see claim 1, column 12, lines 24-26 of *Simán* and column 2, lines 44-47 of *Simán*), whereas according to Applicants' claim 1 as amended, the guide wire is accommodated in the first lumen bordered by the convex portion of the arc-shaped partition.

In addition, *Simán* fails to disclose or suggest providing one of the lumens with a round shape. On the contrary, *Simán* is very specific about the shape of the lumen wall having a central arcuate portion and two wing portions. The shape of the lumen wall with two wing portions excludes a round catheter lumen bordering the lumen wall.

Thus, it is highly unlikely that a person of ordinary skill in the art would try to transfer a ratio of cross-sectional areas

of two non-round lumens to a catheter concept with a round lumen and a crescent-shaped lumen as suggested by the Examiner in her combination of *Miller et al* with *Simán*.

Further, it has to be specifically emphasized that *Simán* fails to disclose or suggest the formula

$$F_1/F_2 > D_1^2/D_2^2 \text{ with } F_1>F_2$$

nor any benefits associated therewith. Even if any of the embodiments disclosed by *Simán* actually happen to show a ratio of the cross-sectional areas according to the above formula, any such showing would occur at best by accident. Such accidental disclosure cannot provide any hint to a person of ordinary skill in the art to adopt the accidentally-disclosed ratio for use in a completely different lumen layout.

In fact, FIG. 4 of *Simán* actually discloses the opposite of the formula as set forth in Applicants' claim 1 as amended. In

FIG. 4 of *Simán*, $F_1/F_2 < D_1^2/D_2^2$ with $F_1>F_2$, as can be easily seen by the following.

The cross-sectional area of the upper lumen in FIG. 4 of *Simán* is approximately three times as large as the cross-sectional area of a circle fitted at the common axes of symmetry. With the upper lumen being the apparently smaller lumen, its cross-sectional area is referred to as F_2 keeping the nomenclature of the present invention. F_2 equals approximately $3 \cdot \pi \cdot (D_2/2)^2$.

The cross-sectional area of the lower lumen in FIG. 4 of *Simán* is approximately two times larger than the cross-sectional area of a circle fitted at the common axes of symmetry. With the lower lumen being the apparently larger lumen, its cross-sectional area is referred to as F_1 keeping the nomenclature of the present application. F_1 equals approximately $2 \cdot \pi \cdot (D_1/2)^2$.

The quotient F_1/F_2 thus yields approximately

$$F_1/F_2 = [2 \cdot \pi \cdot (D_1/2)^2] \; / \; [3 \cdot \pi \cdot (D_2/2)^2] = 2/3 \cdot D_1^2/D_2^2 < D_1^2/D_2^2.$$

It is respectfully submitted that a person of ordinary skill in the art would never gather the condition $F_1/F_2 > D_1^2/D_2^2$ with $F_1>F_2$ from *Simán,* which discloses $F_1/F_2 < D_1^2/D_2^2$ with $F_1>F_2$ in at least one embodiment, and transfer this condition to a catheter with lumens shaped in a completely different manner as suggested by the Examiner. Therefore, it is respectfully submitted that a person of orindary skill in the art would never gather the condition recited in Applicants' claim 1 as amended of $F_1/F_2 > D_1^2/D_2^2$ with $F_1>F_2$ from *Simán*, let alone combine it with the teachings of *Miller et al.*

The Examiner's arguments set forth in the penultimate paragraph as page 3 of the Office Action are not understood. The Examiner states that *Simán* discloses that increased thickness in lumen wall along one of the lumen portion provides increased kink

resistance and, therefore, meets the formula that Applicants disclose $F_1/F_2 > D_1^2/D_2^2$. Actually, Applicants' formula as recited in claim 1 as amended has nothing to do with the thickness of the lumen wall. In fact, the thickness of the lumen wall does not even appear in the formula. Accordingly, the Examiner's assertion that *Simán* teaches Applicants' formula as recited in claim 1 as amended is unfounded.

Similarly, it is respectfully submitted that one skilled in the art would have no reason to combine the teachings of *Simán* with any teachings of *Currier et al*, particularly, where *Currier et al* teaches away from the specific structure of Applicants' claimed catheter as recited in claim 1 as amended as discussed above.

Accordingly, it is respectfully submitted that Applicants' invention as recited in claim 1 as amended and the dependent claims 5, 7-11 and 14-16, are patentable over the cited references.

In summary, claim 1 has been amended and claims 3, 4, and 6 have been canceled. In view of the foregoing, it is respectfully requested that the claims be allowed and that this application be passed to issue.

Respectfully submitted,
Ulrich PFEIFFER ET AL

COLLARD & ROE, P.C.
1077 Northern Boulevard
Roslyn, New York 11576
(516) 365-9802

Frederick J. Dorchak, Reg.No.29,298
Edward R. Freedman, Reg.No.26,048
Attorneys for Applicants

FJD:cmm

Enclosure: Copy of Petition for three-month Extension of Time

I hereby certify that this correspondence is being deposited with the U.S. Postal Service as first class mail in an envelope addressed to: Commissioner of Patents, P.O. Box 1450, Alexandria, VA 22313-1450, on March 18, 2008.

Amy Klein

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